Explore Albedo

Create an albedo collage and see which surfaces absorb or reflect heat.

***Albedo* is the measure of how much light something reflects. The more light something absorbs, the lower its albedo and the warmer it will get. Areas with high albedo reflect more light and energy.**

Image: UCAR Center For Science Education.

Albedo Collage

Materials Needed:

Index card, pieces of black, white, dark and light blue paper (or draw your own), glue, scissors.

Instructions:

Rip or cut pieces of paper and glue them to an index card. Imagine the paper pieces represent ice, snow, and ocean water.

Think About: Does your collage mostly reflect or absorb light and heat?

Albedo Testing

Materials Needed:

White paper and black paper, two ice cubes, water resistant surface, desk lamp. Optional: plastic wrap, ruler, stopwatch.

Instructions:

Place the white paper and black paper side by side on a water-resistant surface, such as a cookie sheet. If desired, place plastic wrap on top of the papers. Place one ice cube on each paper. Shine a desk lamp over the ice and papers. Observe what happens. Optional: You can keep track of the size of each ice cube over time with a ruler and stopwatch.

Think About: Which ice cube melted faster? Which surface reflected more light? Which surface absorbed more heat? Which has a higher albedo? How does this relate to sea ice?

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Earth's Albedo and the Sun

Which color reflects more light?

Albedo is the measure of how much light something reflects. White surfaces, like snow, reflect more sunlight. They have a high albedo. Dark surfaces absorb sunlight and have a low albedo. As ice and snow melt, darker land and water absorb more sunlight and heat.

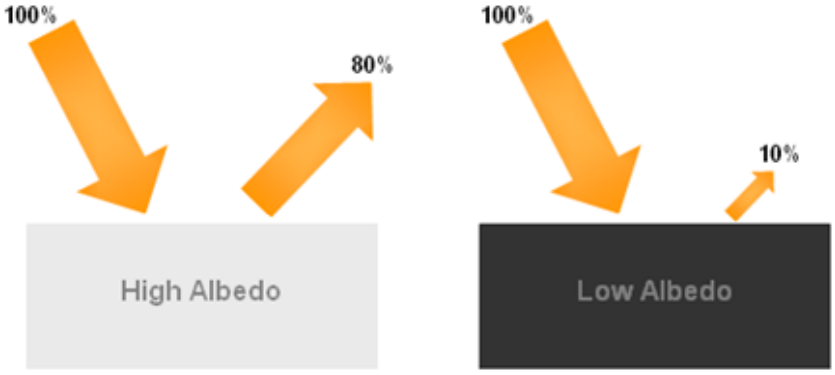

Image: North Carolina Climate Office.

Image: Claudia Schwarz on Unsplash.

Sunlight determines seasons and climates around the Earth. The Earth reflects about 30% of the Sun's energy. Different regions of Earth have different land cover, and they reflect sunlight in different amounts. The high albedo of light surfaces, such as snow and ice, reflects more of the sunlight (84%). The low albedo of darker surfaces, such as forests and oceans, absorbs most of the sunlight and reflects much less (14%). Albedo is an important way Earth keeps its climate systems in balance.

NASA scientists study the Earth's ability to reflect the Sun's energy. Although the planet's overall albedo has not changed significantly in the last two decades, different regions are changing in their ability to reflect heat. The Arctic is losing ice cover and absorbing more heat, while Antarctica is reflecting more sunlight as precipitation and snow cover has increased in that region. Earth's changing landscapes also change in their ability to reflect or absorb the Sun's heat.

Information from NASA Earth Observatory:
earthobservatory.nasa.gov/images/84499/measuring-earths-albedo

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